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REPORT
ON

FIFTH INTERNATIONAL CONFERENCE
ON NONLINEAR HYPERBOLIC PROBLEMS

by

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Report

From Monday June 13 through Friday June 17, 1994, the State University of New York at Stony Brook hosted the Fifth International Conference on Hyperbolic Problems. The previous four international conferences in this series were held in Europe (St. Etienne in 1986, Aachen in 1988, 1990 in Stockholm in 1990, and Taormina in 1992). The international conference at Stony Brook is the first of the series held in United States in this series. It is of considerable benefit to U.S. scientists, researchers and graduate students to have such an international conference in the United States.

The conference was attended by 245 registered participants. 172 papers were presented. Among them, there were 13 plenary presentations, 30 invited presentations and 129 contributed presentations. The conference has provided financial support for 12 U.S. graduate students for attending the conference.

The conference has enhanced the interaction among not only among close colleagues, but also among research in different fields: analysis, numerics and applications.

The Fifth International Conference on Hyperbolic Problems held at Stony Brook has maintained the high scientific level and the breadth associated with this series.

Basic conference themes were theory, computation, and applications. Of the 172 papers, 81 were devoted to theory, 60 to computation and 31 to applications.

The conference demonstrated that hyperbolic problems and conservation laws play an important role in many areas including industrial applications and the studying of elasto-plastic materials. Among the various topics covered in the conference, we mention: the big bang theory, general relativity, critical phenomena, deformation and fracture of solids, shock wave interactions, numerical simulation in three dimensions, the level set method, multidimensional Riemann problem, application of the front tracking in petroleum reservoir simulations, global solution of the Navier-Stokes equations in high dimensions, recent progress in granular flow, and the study of elastic plastic materials.

We highlight a few of the significant conference announcements and results:

- *Uniqueness of solutions constructed by the Random Choice Algorithm*
- *Tracking for shear bands in granular flow*
- *Image processing methods using PDE methods*
- *High quality shock interaction computations with agreement with experimental data*
- *Improved models for elastic/plastic flow*
- *Relaxation methods applied to several physical problems*
- *Non-uniqueness of scaling laws in stochastic PDE*

We believe that the new ideas, tools, methods, problems, theoretical results, numerical solutions and computational algorithms presented or discussed at the conference will benefit the participants in their current and future research. We are working on the proceedings of the conference. The proceedings of the conference will benefit the researchers who could not attend the conference, as well as the participants who missed some of the parallel sessions.

A workshop in Industrial Mathematics and a Tutorial in Parallel Computation was held the preceding Sunday, June 12, 1994. Over 30 people attended the tutorial and about 50 attended the workshop in industrial mathematics.

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